

The Relationship Between Human Resource Management Innovation and Enterprise Innovation Performance and the Mediating Role of Employee Competencies in SMEs in China

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Abstract. In the face of today's competitive and complex environment, small and medium enterprises (SMEs) in China need to innovate in order to foster their development and achieve their business goals. Human resource management is a part of business innovation that cannot be ignored. How to innovate through human resources so as to improve the innovative performance of enterprises and how to ensure that enterprises' human capital contributes to the achievement of their goals are issues that every SME needs to face. This research proposes a model of the relationship between human resource management innovation, employee competencies, and enterprise innovation performance. The model was tested on a survey of 110 employees from a sample of Chinese SMEs. The results show that human resource management innovation is positively related to enterprise innovation performance; human resource management innovation is positively related to employee competencies; employee competencies are positively related to enterprise innovation performance; employee competencies play a partially mediating role in the positive relationship between human resource management innovation and enterprise innovation performance.

1. Introduction

Innovation is the most crucial element of enterprise development, and enterprises that focus on innovation will not only gain competitiveness but also long-term sustainable growth. SMEs tend to benefit more from innovation because they are able to flexibly adapt to changes in their environment or in their industry [1,2]. One aspect of enterprise innovation that must be considered is human resource management. It is one of the factors in achieving organisational performance. It enables enterprises to affect the work skills, attitudes, and behaviours of individuals in order to achieve organisational goals [3]. Human resource management innovation is even more necessary for SMEs as human resources are one of the main barriers to innovation in SMEs [4]. Employee competencies are the potential characteristics of an employee. They can be the knowledge, skills, capabilities, and personalities that an employee possesses. These characteristics make them different and are necessary to the improvement of organisational performance [5]. Employee competencies affect the effectiveness and development of individuals, teams, and organisations, including employees' abilities to communicate, adapt, and work as a team, as well as their intercultural competence, self-efficacy, and ethical competence [6].

The purpose of this paper is to investigate the relationship between human resource management innovation, enterprise innovation performance, and the

mediating role of employee competencies. Questionnaires were distributed within Chinese SMEs for data collecting and SPSS was used for data analysis. From the perspective of management practice, the findings of this study have implications for SME managers to innovate in human resource management and improve the innovative performance of their enterprises.

2. Literature Review

2.1. Human Resource Management Innovation

Human resource management innovation is a non-technical management innovation, which refers to the creation and application of the most up-to-date practices, procedures, structures, or methods regarding human resource management with the aim of adding value to the organisation and achieving its objectives, either directly or indirectly [7-9]. There are various types of human resource management innovation, such as innovation in recruitment and selection, innovation in training, innovation in performance management, and innovation in compensation and rewards [7,8].

2.2. Enterprise Innovation Performance

Enterprise innovation performance is considered to be the efficiency of an enterprise's innovation process, the outcome of its output, and its contribution to the

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development of the enterprise [10]. Enterprise innovation performance can contribute to the efficiency of its economy through innovative activities, including technological innovation and product innovation. Innovation performance refers to the development of new products and services, organisational structures, cultures, strategies, and management concepts. Innovation performance can help SMEs become more flexible and competitive, thus becoming innovation-led economies [11]. Innovation performance is the accumulated outcomes of innovation activity in an industry or product segment, and it is a direct indicator of innovation output [12]. Innovation performance is divided into management innovation performance and technological innovation performance. Management innovation performance refers to the degree of response to the change in the enterprise environment and the degree of innovative administration in various aspects. Technological innovation refers to the extent to which an enterprise exploits new technologies, integrates them into new products, or promotes new procedures [12].

2.3. The Relationship Between Human Resource Management Innovation and Employee Competencies

Human resource management should focus on improving employee competencies, including knowledge, skills, experience, motivation, and values, and keeping them in line with the development of the enterprise. Employee competencies can be used as one of the competitive advantages of an enterprise [13]. A focus on human resource practices leads to employee competencies, employee motivations, and employee efficiency, which in turn promotes a more effective and efficient organisation [4].

Selecting the right employee for the right position should be integrated with the development of employee competencies in relation to the company's strategy and objectives. Effective recruitment and selection can lead to the selection of highly competent employees for the company, which will give the organisation a competitive advantage and high performance [6]. Human resource management in training and development can improve employee competencies, which in turn can contribute to the development of overall organisational performance [14]. In addition, performance management in human resource management is the assessment of individual employee competencies as well as other aspects of performance in order to measure and improve employee competencies and performance, thereby helping further contribute to the overall performance of the enterprise [15].

2.4. The Relationship Between Enterprise Innovation Performance and Employee Competencies

Employee competencies are a collection of knowledge, behaviours, and skills. These knowledge, behaviours, and

skills give employees the potentially effective ability to perform well in innovative activities or tasks in the enterprise. The enhancement and improvement of employee competencies are important for enterprise performance and contribute to organisational effectiveness [16]. Developing the knowledge, skills, and competencies of employees to enable them to innovate will help to facilitate change and enable the enterprise's ability to innovate, thereby improving its innovation performance. Innovation performance and the development of employees' knowledge, skills, and competencies go hand in hand, and efforts to develop employees' knowledge, skills, and competencies to support an enterprise's innovation capability will contribute to the enterprise's innovation performance and play an important role in economic recovery [17].

3. Hypothesis Development

In conclusion, according to the literature review, enterprise human resource management innovation includes several aspects: recruitment, training, performance management, and compensation and rewards [7,8]. Innovation in these aspects can all improve employee competencies [6,14,15], and high employee competencies will further contribute to the innovative performance of the enterprise [16,17]. Based on these statements, this paper proposes a model of the relationship between human resource management innovation, employee competencies, and enterprise innovation performance. The model is shown in Figure 1 and the following hypotheses are proposed:

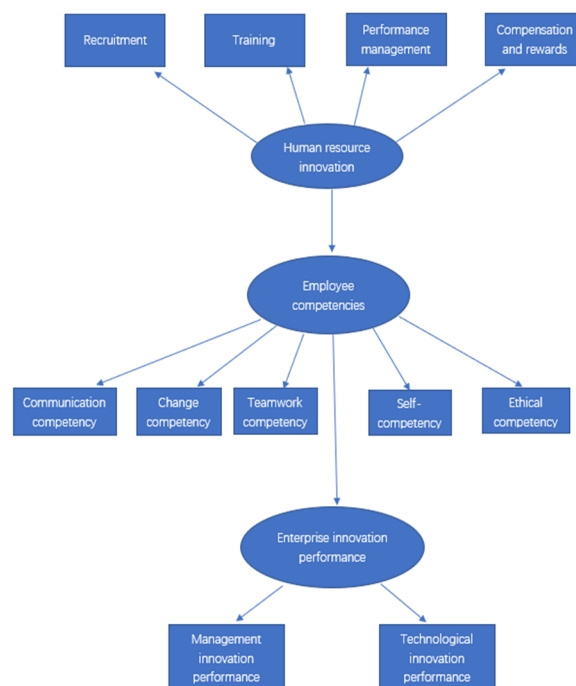


Fig. 1. The relationship model of enterprise human resource management innovation, employee competencies and enterprise innovation performance (Source: by author).

Hypothesis 1: Human resource management innovation is positively correlated with enterprise innovation performance.

Hypothesis 2: Human resource management innovation is positively correlated with employee competencies.

Hypothesis 3: Employee competencies are positively correlated with enterprise innovation performance.

Hypothesis 4: Employee competencies play an intermediary role in the positive relationship between human resource management innovation and enterprise innovation performance.

4. Methodology

In order to test the proposed model and hypotheses, questionnaires and convenience sampling are used in this paper. The target interviewees are employees from SMEs in China. In order to obtain representative and valid data, the sample size of this paper was determined to be 100 participants. This paper uses a Likert-type five-point scale measuring multiple items on different variables, where respondents had to demonstrate their level of agreement with all statements in the questionnaire, ranging from 1 (strongly disagree) to 5 (strongly agree).

5. Data Analysis and Results

5.1. Demographic Analysis of Participants and Results

The following Table 1 shows the gender characteristics of participants from SMEs in China. In terms of gender distribution, the frequency and percentage of females were marginally higher than that of males, at 55.5%. However, the overall male-to-female ratio was close to 1:1, which indicates that the participants were basically gender balanced and the sample was appropriately selected.

Table 1. Gender characteristics of participants (Source: by author).

	Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	49	44.5	44.5	44.5
	Female	61	55.5	55.5	100.0
	Total	110	100.0	100.0	

Age characteristics of participants are shown in the following Table 2. Most participants were aged 26-35, accounting for 40.9% of all participants. Other age groups accounted for a smaller proportion of participants, with the smallest group being those aged 46-55, accounting for only 7.3%. This indicates an unequal age distribution of the sample.

Table 2. Age characteristics of participants (Source: by author).

	Age	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-25	26	23.6	23.6	23.6
	26-35	45	40.9	40.9	64.5
	36-45	31	28.2	28.2	92.7
	46-55	8	7.3	7.3	100.0
	Total	110	100.0	100.0	

According to the characteristics of years of working in Table 3, most of the participants had 6-10 years of work experience, accounting for 38.2%. This was followed by those with 1-5 years of work experience and those with 11-15 years of work experience, accounting for 29.1% and 20.9% respectively.

Table 3. The characteristics of years of working of participants (Source: by author).

	Years of working	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-5	32	29.1	29.1	29.1
	6-10	42	38.2	38.2	67.3
	11-15	23	20.9	20.9	88.2
	16-20	9	8.2	8.2	96.4
	Over 20	4	3.6	3.6	100.0
Total	110	100.0	100.0		

5.2. Descriptive Analysis and Results

As shown in the following Table 4, human resource management innovation dimension including four sub-dimensions, which are recruitment, training, performance management, and compensation and rewards. The standard deviations of all the human resource management innovation dimensions are between 0.54128 and 0.64637. All dimensions have a mean value between 4 and 5. The highest is Recruitment at 4.4909. The lowest is Compensation and rewards at 4.2667. The other two dimensions are Training (mean=4.3667) and Performance management (mean=4.3212).

Table 4. Descriptive statistics of human resource management dimension (Source: by author).

HRM innovation dimension	N	Mini mum	Maxi mum	Mean	Std. Deviation
Recruitment	110	1.00	5.00	4.4909	.54128
Training	110	1.00	5.00	4.3667	.54735
Performance management	110	1.00	5.00	4.3212	.64637
Compensation and rewards	110	1.33	5.00	4.2667	.54333
Valid N (list wise)	110				

In terms of employee competencies, there are five sub-dimensions including communication competency, change competency, teamwork competency, self-competency, and ethical competency. Based on descriptive statistics in Table 5, all of the standard deviations of employee competencies are between 0.44653 and 0.61320. Obviously, the mean of ethical competency is the highest in Table 5 among the employee competencies dimensions, at 4.4000. It indicates that participants from Chinese SMEs were more likely to believe that their ethical competence had been enhanced. The following ones are communication competency (Mean=4.2818), change competency (Mean=4.2545), and teamwork competency (Mean=4.2515) in sequence. Besides, the mean score of self-competency is the lowest, at 4.1125.

Table 5. Descriptive statistics of employee competencies dimension (Source: by author).

Employee competencies dimension	N	Mini mu	Maxi mum	Mean	Std. Deviation
Communication competency	110	3.00	5.00	4.2818	.50137
Change competency	110	3.00	5.00	4.2545	.54497
Teamwork competency	110	3.00	5.00	4.2515	.48879
Self-competency	110	3.00	5.00	4.1152	.61320
Ethical competency	110	3.33	5.00	4.4000	.44653
Valid N (list wise)	110				

Table 6 demonstrates two sub-dimensions of enterprise innovation performance, including management innovation performance and technology innovation performance. The standard deviation of management innovation performance and technological innovation performance are 0.71212 and 0.76202 respectively. The mean of management innovation performance (4.1500) is lower than that of technological innovation performance (4.1773). It means participants from Chinese SMEs are more inclined to think that their technological innovation performance has been improved more than their management innovation performance.

Table 6. Descriptive statistics of enterprise innovation performance dimension (Source: by author).

Enterprise innovation performance dimension	N	Minimum	Maximum	Mean	Std. Deviation
Management innovation performance	110	1.00	5.00	4.1500	.71212
Technological innovation performance	110	1.00	5.00	4.1773	.76202
Valid N (list wise)	110				

5.3. Correlation Analysis and Results

From Table 7, the Pearson correlation between human resource management innovation and employee competencies is 0.283 and the Sig. (2-tailed) is 0.003, which is less than 0.01 level. It represents that there is a relatively strong positive correlation between human resource management innovation and employee competencies. The Pearson correlation between human resource management and enterprise innovation performance is 0.602, which is marked as the correlation is significant at the 0.01 level (2-tailed). It illustrates that there is a positive correlation between human resource management innovation and enterprise innovation performance. In addition, the Pearson correlation between employee competencies and enterprise innovation performance is 0.352 and the correlation is significant at

the 0.01 level, which shows a relatively strong positive correlation between employee competencies and enterprise innovation performance.

Table 7. Correlation between human resource management innovation dimension, employee competencies dimension and enterprise innovation performance dimension (Source: by author).

		HRM innovation	Employee competencies	Enterprise innovation performance
HRM innovation	Pearson correlation	1	.283**	.602**
	Sig. (2-tailed)		.003	.000
	N	110	110	110
Employee competencies	Pearson correlation	.283**	1	.352**
	Sig. (2-tailed)	.003		.000
	N	110	110	110
Enterprise innovation performance	Pearson correlation	.602**	.352**	1
	Sig. (2-tailed)	.000	.000	
	N	110	110	110

** . Correlation is significant at the 0.01 level (2-tailed).

5.4. Mediating Effect Analysis and Results

Firstly, the total effect between variable-human resource management innovation and variable-enterprise innovation performance is analysed by linear regression, as shown in Table 8. The sig. is 0.000 (<0.05), therefore, human resource management innovation has a significant effect on enterprise innovation performance.

Table 8. Total effect significance between human resource management innovation and enterprise innovation performance (Source: by author).

Model		Coefficients ^a		t	Sig.
		Unstandardized Coefficients	Standardized Coefficients		
1	(Constant)	1.625	.351	4.630	.000
	Enterprise innovation performance	.642	.082	.602	.7831
			Error		

Then, as shown in Table 9, the direct effect of variable-human resource management innovation on mediating variable-employee competencies is analysed by linear regression. The sig. is 0.003 (<0.05), which illustrates that human resource management has a significant effect on employee competencies.

Table 9. Direct effect of human resource management innovation on employee competencies (Source: by author).

Model		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.308	.312		10.587	.000
	HRM innovation	.218	.071	.283	3.065	.003

From Table 10, the direct effect of variable-human resource management innovation and mediating variable-employee competencies on variable-enterprise innovation performance is analysed by linear regression. The sig. of human resource management innovation and employee competencies are both <0.05. It means that employee competencies play a partial mediating role in the positive relation between human resource management innovation and enterprise innovation performance.

Table 10. Direct effect of human resource management innovation and employee competencies on enterprise innovation performance (Source: by author).

Model		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.008	.440		2.288	.024
	HRM innovation	.512	.073	.54	6.981	.000
	Employee competencies	.240	.095	.19	2.530	.013

6. Discussion

The importance of human resource management innovation on enterprise innovation performance and the mediating role of employee competencies were verified by using employee competencies as a mediator between human resource management innovation and enterprise innovation performance. The findings of this research have implications for the improvement of human resource management and innovation performance in Chinese SMEs. Human resource management innovation can be reflected in recruitment, training, performance management, compensation, and rewards. With regard to recruitment, companies should carry out scientific and comprehensive recruitment planning, taking into account both long-term and short-term goals. Based on the actual situation of the enterprise, a human resources recruitment plan that matches the actual needs of the enterprise should be developed. For example, with the popularity of remote working in recent years, enterprises can explore a combination of full-time and part-time recruitment models. As for training, enterprises should maintain flexible and innovative training based on their actual situation and needs. For instance, enterprises can use

online training to save costs while providing employees with a convenient training model that allows them to learn anytime and anywhere. In terms of performance management, enterprises should develop performance management plans with their employees, taking into account their strategic objectives and their actual needs. The enterprise should conduct 360-degree evaluations from superiors and subordinates, colleagues, and individual employees, and provide timely feedback on the evaluation results. In addition, compensation and rewards should be used throughout the performance management process to motivate employees to improve their personal abilities and contribute more to the enterprise and society with both financial and spiritual rewards.

7. Conclusion

This paper uses a quantitative research approach to validate the relationship between human resource management innovation, employee competencies, and enterprise innovation performance. Through a series of analyses, this paper verifies that human resource management innovation and employee competencies have a positive impact on enterprise innovation performance, with employee competencies mediating the positive relationship between human resource innovation and enterprise innovation performance. In conclusion, this paper provides key management implications for Chinese SMEs, prompting enterprises to promote the development of various competencies among their employees, thereby contributing to their overall organisational effectiveness, as well as enabling them to innovate and maximise the alignment of human resource management with organisational objectives and promote innovative performance.

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